Solvent Update, Labs-01

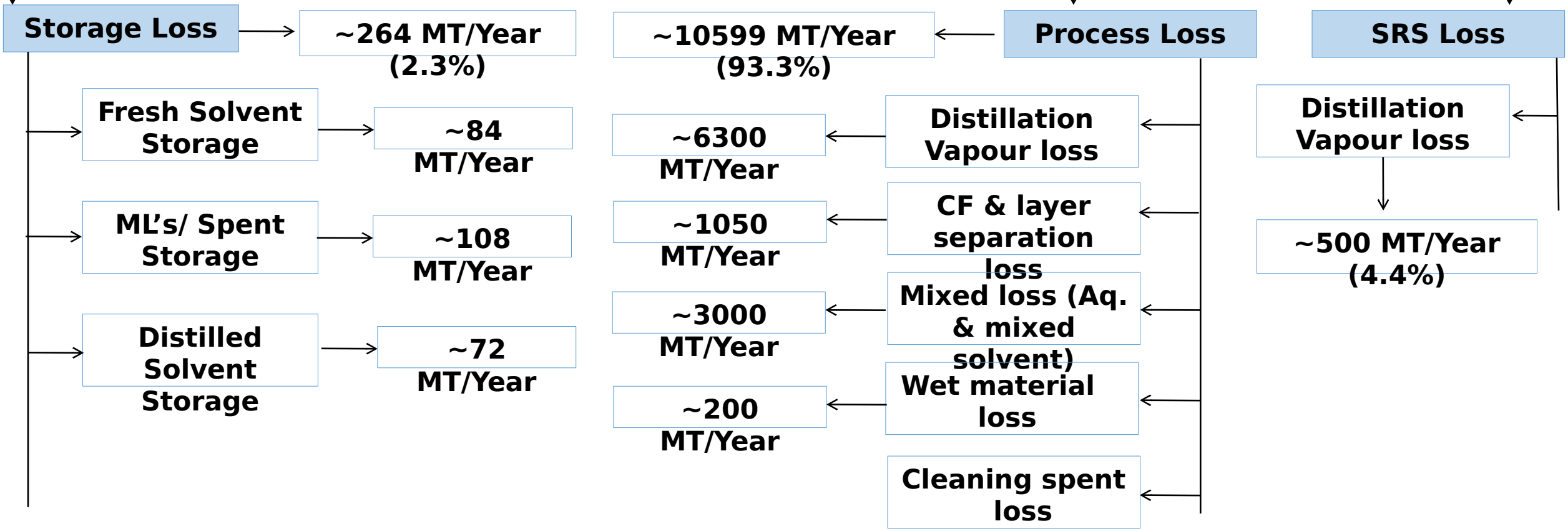
Solvent Loss Break-Up (Base line)

Labs-I in	**31,959**	**MT**
Fresh solvent	**20,657**	
RFS From Vendors(Job work)	**7,567**	
RFS & Spent received from other Msn units(Sales+STO)	**793**	
Opening balance of RFS & spent(Plant+Vendors) 01.04.2024	**2,942**	
Labs-I out	**20,583**	**MT**
Spent sent to Job work	11,785	
Spent sales	4,264	
RFS & Spent sent to other Msn units(Sales+STO)	2,047	
Closing balance of RFS & spent(Plant+Vendors) 31.03.2025	2,487	
Plant in - Plant out(Gap in tons)	**11,376**	
% of gap	**36%**	

Spent sent to SRS	3,549
RFS From SRS	2,526
SRS In - SRS out(Gap in tons)	1,023
% of gap	**29%**

Solvent Loss Break-Up (Base line)

In-house losses
(36% ---- 11,363 MT/Year)



Target 10% reduction (3290 MT/Year) against Input

Reduction at Source

- Reduction by 2% (640 MT/Year)

- Volume reduction at source.
- Limiting the MeOH usage for dry ice application by Segregation of cryo operation at one location.
- Looking at CPI/Spray ball technologies for cleaning application.

Reduction of Vapour loss

- Reduction by 25% (1900 MT/Year)
- Standardization of design:
  - Vent condenser & N2 blanketing system for storage tanks
  - Utility for condenser (solvent based).
  - Utility distribution loop
- Standardization of Operation:
  - Vacuum of NMT 300 mmHg for low boils (DCM, MTBE..,)
  - Condenser de-scaling
  - Blow down of cooling tower water.

Reduction of Aq. mix-up

- Reduction by 25% (750 MT/Year)
- Sagrigation of Aqueous streams & Solvent streams.
- Flashing the mixed streams before sending to ETP.

Action Plan

Target: Reduction of Solvent loss by 30% (from the current base line of 36%)

Time line: By Mar’26 **(~ 275 TPM)**.

A) Phase-01 (Immediate action where no investment is required) by July’25 --- ~80 TPM

Action Plan:

i) Segregation of Aq. mixed streams (Methanol water, IPA water, DMF water) ---- ~30% will be diverted by July’25 (55 TPM).

ii) De-scaling of condenser’s for vent loss minimization ---- ~10% reduction by July’25 (20 TPM)

iii) Filling the distillate receiver with water for low boils (DCM)

iv) Standardization of vacuum application’s ---- Continuous improvement

B) Phase-02 (Facility modification)---- Long term by Mar’26

- Utility modification, Usage of vacuum controller, Reduction in vapour column height ---- **By Dec’25 (~100 TPM)**
- Vent condenser with N2 blanketing system for ML’s Or Distilled Storage tanks (DCM, MTBE, Acetone..,).
- Insulation for storage tanks (DCM,MTBE & Acetone).
- N2 blanketing system with Vent condenser for CF catch pot’s.
- CIP/Spray ball system for cleaning optimization.
- Storage tanks for reduction of mix-up losses

CAPEX ~ 4.0 to 5.0 Cr

1. Utility modification for condenser (27 Reactors identified) ---- 25 L
2. N2 Blanketing system (5.0 L/System) ----- 2.5 Cr. (Considering 50 Systems)
   a. Condenser ---- 2.5 L
   b. Utility lines --- 1.0 L
   c. Breather valve --- 0.5 L
   d. N2 lines with regulator --- 0.5 L
   e. Other (valves & insul.) ---- 0.5 L
3. Utility Upgradation (adding additional capacity) ---- 1.0 Cr
4. Vacuum controllers & Spray ball or CIP system

Pay back Calculation:

- Assuming 2% of reduction realized on Input volume (~630 MT/Year).
- Average Cost per @ 60 Rs/Kg
- Saving's --- 3.8 Cr
- Pay back --- Less than 2.0 Year's